UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/521,433	01/14/2005	Kazuya Goto	264595US0PCT	1537

22850 7590 08/21/2006

C. IRVIN MCCLELLAND
OBLON, SPIVAK, MCCLELLAND, MAIER & NEUSTADT, P.C.
1940 DUKE STREET
ALEXANDRIA, VA 22314

EXAMINER	
PIZIALI, ANDREW T	
ART UNIT	**PAPER NUMBER**
1771	

DATE MAILED: 08/21/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/521,433	GOTO ET AL.	
	Examiner	Art Unit	
	Andrew T. Piziali	1771	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *30 June 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-36* is/are pending in the application.

4a) Of the above claim(s) *1,3 and 15-36* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *2 and 4-14* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *14 January 2005* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *1/14/2005*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

1. Applicant's election with traverse of Group I (claims 1-14), Species 1 from Species Group I, and Species 1 from Species Group II, in the reply filed on 6/30/2006 is acknowledged. The traversal is on the grounds that there is no burden on the examiner to search all six inventions. This is not found persuasive because a search for all six inventions would require the examiner to search in a plurality of distinct classes demonstrating an undue burden on the examiner. The examiner has withdrawn the Species Group II restriction requirement.

2. Claims 15-36 are withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to nonelected inventions, while claims 1 and 3 are withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to a nonelected species. It is noted that although instructed in the restriction requirement, the applicant failed to identify the claims readable on the elected species.

3. The prepreg of the present invention must have at least one surface completely covered with resin (see page 9, lines 22 and 23 of the specification). Claim 1 is withdrawn as being drawn to non-elected Species 2 from Species Group I, because the resin does not completely cover the (other) surface of the sheet-like reinforcing fiber substrate (see first embodiment of the invention description on page 5, lines 18-22 of the specification). Claim 3 is withdrawn as being drawn to non-elected Species 2 from Species Group I, because the resin does not completely cover the (other) surface of the sheet-like reinforcing fiber substrate (see claim 3).

The requirement is still deemed proper and is therefore made FINAL.

Specification

4. The abstract of the disclosure is objected to because the abstract in an application filed may not exceed 150 words in length. Correction is required. See MPEP § 608.01(b).

Claim Rejections - 35 USC § 112

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

6. Claims 2 and 4-14 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Regarding claim 2, the phrase "sheet-like" renders the claims indefinite because the claims are subjective rather than definite.

Claim Rejections - 35 USC § 102/103

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

9. Claims 2, 4-7, 11 and 13 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over USPN 6,391,436 to Xu et al. (hereinafter referred to as Xu).

Regarding claims 2, 4-7, 11 and 13, Xu discloses a prepreg comprising a reinforcing fiber substrate sheet containing reinforcing fiber, and a matrix resin, wherein said matrix resin exists on both surfaces of the substrate, and a portion inside the substrate into which the matrix resin has not been impregnated is continuous (see entire document including column 6, lines 40-63, column 7, lines 52-58, and column 15, lines 10-13).

In the event that it is shown that Xu does not disclose the claimed invention with sufficient specificity, the invention is obvious because Xu discloses that claimed constituents (such as reinforcing fiber substrate, matrix resin substrate surfaces, and substrate air channels) and discloses that they may be formed in combination. It would have been obvious to one having ordinary skill in the art at the time the invention was made to form the claimed composite motivated by the expectation of successfully practicing the invention of Xu.

Regarding claims 4-7, Xu discloses that the matrix resin may be a thermosetting resin composition (column 9, lines 40-51).

Regarding claim 5, Xu discloses that the resin may be cured at a temperature on the order of about 55 to about 75C (column 9, lines 25-38). Therefore, it appears that the resin is curable by holding at 90C for 2 hours. In the event that it is shown that resins would not inherently possess the claimed property, Xu also discloses that higher and lower cure temperatures can be utilized (column 9, lines 25-38). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to make the make the resin with any suitable

curing temperature and time, such as 90C for 2 hours, because it is within the general skill of a worker in the art to select a known curing temperature and time on the basis of its suitability and desired characteristics.

Regarding claim 6, Xu discloses that the minimum viscosity of the resin may be no more than 1000 poise (column 9, lines 16-24).

Regarding claim 7, Xu discloses that the resin composition may comprise epoxy resin as a primary component (column 9, lines 40-52).

Regarding claim 11, Xu discloses that the reinforcing fibers may be carbon fiber or glass fiber (column 7, lines 52-58).

Regarding claim 13, Xu discloses that the substrate may be a unidirectional, woven, knitted, braided, mat, and the like (column 7, lines 52-58).

Claim Rejections - 35 USC § 103

10. Claims 8-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over USPN 6,391,436 to Xu as applied to claims 2, 4-7, 11 and 13 above, and further in view of USPN 5,279,893 to Hattori et al. (hereinafter referred to as Hattori).

Regarding claims 8-10, Xu discloses that a thermosetting and thermoplastic resin mixture may be used (column 9, lines 40-52), but Xu does not appear to mention the use of a mixture wherein the thermoplastic is not dissolved within the thermosetting resin composition. Hattori discloses that it is known in the prepreg art to use a thermosetting and thermoplastic resin mixture wherein the thermoplastic is not dissolved with the thermosetting resin composition, to give the prepreg excellent toughness (see entire document including column 2, lines 25-44). It

would have been obvious to one having ordinary skill in the art at the time the invention was made to make the resin from any suitable resin material, such as a thermosetting and thermoplastic resin mixture wherein the thermoplastic is not dissolved with the thermosetting resin composition, as taught by Hattori, because the resin would provide the prepreg with excellent toughness and because it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability and desired characteristics.

Regarding claims 9 and 10, Hattori discloses that the fibers may be staple fibers (column 4, lines 5-15). Considering that staple fibers have lengths of from 1 inch to 8 inches (25.4 to 203 mm), Hattori discloses that the fibers may have a length of 1 to 50 mm. It is noted that Hattori also discloses that the fibers may have any length sufficient enough to be paralleled (column 4, lines 5-15). Considering that fibers of 1 to 50 mm may be paralleled, Hattori discloses that claimed fiber length with sufficient specificity.

Regarding claim 10, Hattori discloses that the fibers may have a size of 500 denier (56 tex) or less (column 4, lines 5-15).

11. Claims 12 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over USPN 6,391,436 to Xu as applied to claims 2, 4-7, 11 and 13 above, and further in view of USPN 6,045,898 to Kishi et al. (hereinafter referred to as Kishi).

Regarding claim 12, Xu is silent with regards to prepreg substrate fiber weight, therefore, it would have been necessary and thus obvious to look to the prior art for conventional substrate weights. Kishi provides this conventional teaching showing that it is known in the prepreg art to use a substrate weight of 100 to 320 g/m^2 (see entire document including column 14, lines 44-51 and claim 15). Therefore, it would have been obvious to one having ordinary skill in the art at

the time the invention was made to make the prepreg with a substrate weight of 100 to 320 g/m^2, as taught by Kishi, motivated by the expectation of successfully practicing the invention of Xu and because the prepreg would possess the desired tackiness and smoothness.

Regarding claim 14, Xu is silent with regards to prepreg substrate thickness, therefore, it would have been necessary and thus obvious to look to the prior art for conventional substrate thicknesses. Kishi provides this conventional teaching showing that it is known in the prepreg art to use a substrate thickness of 0.15 to 0.35 mm (150 to 350 μm) (see claim 15). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to make the prepreg with a substrate thickness of 150 to 350 μm, as taught by Kishi, motivated by the expectation of successfully practicing the invention of Xu.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Andrew T. Piziali whose telephone number is (571) 272-1541. The examiner can normally be reached on Monday-Friday (8:00-4:30).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Terrel Morris can be reached on (571) 272-1478. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

6/16/06

atp

ANDREW T. PIZIALI
PATENT EXAMINER